Edison Portland Cement Company Records
Plant Operations Notebook, N-99-07-01.1

This notebook was used by Edison for notes and calculations relating to operations at the Stewartsville works during the period July 1905-February 1906. The calculations detail plant capacity and losses in time at different stages of production. Included is information regarding the crusher and packing plants, the kilns, and the quarry. Other entries pertain to supplies, repairs, and the consumption of coal and oil. The front cover is marked "Cement." The pages are unnumbered. Approximately 60 pages have been used.

N-(99-07-01.1)

Loss of capacity at Crushing plant due to following — from July To 7/26 196 days —

Waiting for rock	123.0	min daily
Giants	11.8	"
1st 36 Rolls	7.5	
2 36 Rolls	5.4	
3 36 Rolls	12.6	5.8 due to breaking Chain
Hoppers	15.4	11.6 due to big Rocks —
Car Hoist + Wkup Dump	8.7	
Engine 101	2.6	
Tracks Car trouble foot mchn's	3.5	
Dryer 101	13.3	
Conveyor 99	1.5	
" 101	5.7	
" 102	6.6	
104	17.5	9.3 lost by old bruce Co Lost Motor +
Changing Trepper	9.4	
	244.5	min daily

Exactly half of the whole loss of time is due to waiting for Rock.

The Quarry record shows that the average daily waiting for Cars was 241 minutes daily —

Crusher -

196 Days -

1st 36 Rolls -

Sheared	801
Rolls stopped for grind mill -	345
Belt slipped	53
Power failure	18
Pan - flexowheel	16
Chain broke	100
Choked	47
Refused to mill	18
Repair crusher	141
Chute choked	10
	1452

7.4 mins Daily -

2nd 36 Roll

Sheared	281
Power belt slipping	70
Chain off sprocket	17
Rolls choked	40
Waiting for mine report	157
Repair crusher	66
Changing shear pins	20
Non shipping rev. office	365
Chutes sheared	34
	1054

5.4 " "

104 Cons 196 Days

Motor stopped	1174 ✓
Belt slipped	269 ✓
Motor burned out	265 ✓
" Short circ'd	37 ✓
Belt fire burned out	52/3 ✓
Repair Motor	43 ✓
Changing fuse hot	5 ✓
Dropped chain broke	35 ✓
Taking up belt	308 ✓
Loose belt	10 ✓
Fuse blew	297 ✓
Repair belt	159 ✓
Put board on chute	5
Take bands off delivery	5
Repair dropper	290
Mont dont start	7
	3431

Hoppers—

			Dur
Rock stuck in Giant Hopper—	2284	11.6	minutes
Hopper under Giant Choked	309	1.5	
Empty overflow Hopper	115	0.6	
Cleaning Hopper	68	0.3	
Rock stuck in feed Roll—	59	0.3	

are these stops duplicated in Giant record?

Evidently it don't pay to grind up extra large rocks when we are penalized—

210 Days —

Loss Time Con 111 —

Repair belt. 0	7	minutes daily
Cindering " 0	4	
Belt slipped 0	3	
Stuck, overload 0	2.2	
Taking up belt. 0	1.2	
Motor —	5.0	
Shaft Pinion broke.	2.0	
Motor hot, fuse blew, belt slipped another motor	1.5	
Hopper blocked	0.9	
Fuses blew.	1.1	
Fly Shaft Drive bearing —	1.0	
Gudgeons — $	1.5	
Bearing 2nd S	0.4	
Lags on S" No 1	0.7	
Repair shaft 1	0.3	
" Overflow chute	0.3	
New belt. 0	0.5	
Repair Guide Rubbers	0.4	
Miscellaneous	0.3	
	33.3	

Loss time in Chalk Plant daily average from July to Feby 196 days

Engine # 102	12.3	min daily
Feed roll Bijou	0.4	
Blower House	0.6	
Con 109	33.7	
" 110	9.8	
" 111	33.3	
112	5.4	
113+114	5.9	
	101.4	

This is average loss daily outside of Crushing Rolls —

Crushing Rolls loss capacity daily

	101.4
	147.9 minutes
Total —	249.3 "

or 4 Hours + 9 minutes

Substituting Cables sheaves etc. of 2991.32
leaves 3439.53 – leaves daily expense
outside belts } 16.38
Repair labor daily 14.47.

Supplies Chalk Plant. July To Jany inclusive –
210 days –

		Daily	Multiplier
Cables	$ 2934.10	$ 14 00	
Roll plates	1720 54	8.25	3.1
Miscellaneous	554 57	2.64	1.0
Babbitt	600.00	3.00	1.12
Bearings	118 11	.56	
Bushings	123 15	.58	
Motor straps	47 66	.22	
Wood Sheaves	40 56	.24	
Transmission ropes	78.62	.37	
Sheave bushings	26 00	.13	
Gudgeons & bearings	21 34	.12	
Pinion shaft	33.49	.15	
Spacing Rolls	31 32	.14	
Sprockets	19.10	.12	
Scrap Rubber belting	10.33		
Plate bolts	13.59		
Sheaves	7 67		
Check Plate	10 40		
Wear "	14.79		
Wood shear pins	13 00		
Roller chain	4.68	Total 6430 85	
Wire	2.59		
Con Brushes	1.26	$ 30.62 daily	
Brass bushing	2 80		
Oil chain	1 65		

Loss in Clinker Crusher Plant
Average of 196 days.

1st 36 Rolls.	19.0	min daily
2nd 36 Rolls	45.5	
Con 125	31.6	
Con 126	75.9	
No 1 Elev	1.5	
Scraper -	10.4	
	183.9	daily -

Daily loss time in Cement grinding Plant from July for 196 days.

Engine #103		11·3 mins daily
Cont	130	19·8
"	131	10·6
"	132	21·4
"	137	45·8 — 268 ducts drive mechanism from ?
	138	6·6
	139	6·7
	140	2·4
	143	1·4
	144	5·2
		131·2 mins daily

Outside of time lost on Rolls —

Loss on Rolls 231·2
131 2
362.4 total daily loss of Capacity

If drive mechanism in 137 is fixed properly loss will be reduced to 104.4 minutes

Supplies for Cement grinder plant 210 days

		Daily	
Cables	4633.47	22.00	
Roll plates -	3651.60	18.24.	7.6 wide belt
Roll Shafts	1368.62	6.53	
Miscellaneous -	1256.06	5.98	
Babbitt -	1305.43	— not dated	
spacing Rolls	1757.43	8.36	
Bushings —	422.98		
Bearings —	294.46		
Structural steel, Curtings etc -	219.00		
Drive Belt,	183.60		
Roll Sheaves	228.24		
Plate bolts	179.33	— Rotten	
Wood & Rope Sheaves	203.60	Rotten	
Sheave bushings —	155.27		
S Dump Pulley	79.94		
24" 8 ply belt —	123.31	— wants this —	
Tightening Sheaves	37.50		
Ropes Mapple Leg	13.80		
Yokes	10.12		
Gears	20.00		
Pinion shaft —	27.08		
Gudgeons	9.12		
Gypsum screw -	19.00		
Transmission Rope	87.48		
Water Drops	40.29		
Wood wheel pins —	23.79		
Coupling bolts -	51.88	Rotten	
Check plates	28.45		
Rubber Dropsins	10.50		
Wire -	5.18		
Sprocket for samples	5.00		
Bushings for Drive Pulley	55.18		
Wear plates	1.74		
Rail springs	1.60		
Sheaves for Bum up Stacker	2.62		

16512.67

78.63 per day

Substracting 6811.91 - due to dispensing with Repair on rolls leaves, 9700.76.
Total -
Leaves daily Expenses $46.19 -
outside Conveyor Belts

Repair Labor Daily 45.56.
78.63
124.19 - Daily -

But change to spring rolls should reduce it - to 91.75 -
+ probably less for Labor will be very much cleaned -
offset will be extra cost of Coal for power -

Quarry

Loss average daily 196 days -

Waiting for Cars	241. minutes daily
Cleaning Loading Track	69 "
Moving Shovel	77
Shovel Repairs	32.9
Laying loading Track	33.
Waiting for steam	5.
" for Blasting	13.
" for locomotives	5.9
	475.8.

This apparently leaves only 125 minutes daily to load!? Apparently if Quarry works 10 hours & only one shovel at a time the record must be wrong!

Loss on RRailroad

from all causes 1.8 minutes daily —

Changing to spring Rolls saves 56.4 minutes Reducing loss to 91 minutes —

No 1 & 2 Chalk Rolls — 190 days.

Loss daily —

Putting on & off plates 52 minutes daily — as one roll was running this cut down capacity plants to 26.0 min daily

Collars	7436 —	38 min total	1/5"	19.00	"
Starting	873	4.5	"	2.20	"
Springs	3295	17.	"	8.50	"
Bushings	4009	21	"	11.5	"
Drive Pully	1127	6	"	3.0	"
No ore	5986 —	31	"	34.5	"
Stream Oiler	445	2.4	"	1.2	"
Girders	3077	16	"	8.0	"
Coupling & Bolt	1012	5.3		5.3	"
Cables	3116	16.3		8.2	"
Shear	511	2.6		1.3	"
Choked	1900	10.		5.0	"
Belt	1600	8.4		8.4	"
Sheaves	1505	7.8		3.9	"
Bearings	6871	36.		18.0	"
No air	2993	15.2		7.6	"
Hopper	482	2.5		1.2	"
				146.8	
				143	

The records in chalk plant are badly kept for a long time no loss of time was given for putting on plates. Hereafter want every minute accounted for in the 24 hours for each day in the month.

Bet Jany 11 + 17th on Roll No 2 there is a lot of time no accounted for. this tends to make records worthless,

Chunker Grinder rolls -

Comparison of total losses

Coupling & line	722	No 1
	868	2
	923	3
Cables	1473	
	1939	
	2446	
Sheared	427	
	606	
	674	
Hopper	527	
	745	
	605	
Plates	5,686	
	11 875 → why?	
	5 397	
Belt -	1105 → why	
	521	
	58	

Sheaves	517
	4534 — why
	1387
Spacing Rolls	7692
	3763
	6898
Bolts	192
	664
	000
Loose Plates,	120
	90
	841
Thrust Collars	1135
	490
	2205
Piston	25
	100
	000

Roll-	607
	000
	000
Bearings	2031
	3067
	1065
Retaining Plate.	206
	000
	000
Collar	26
	1640 —— why
	000
Housing	112
	74
	172

Bushings -	22496 — why
	11 341
	1 110
Springs -	260
	000
	977
Guider -	4319
	3030
	5818
Pkg Bearings -	120
	000
	93
Starting	249
	51
	00

New Bush Jack Shaft.	1275 000 000
Choked	000 23 000
Shafts.	000 7486 13286
Wedging Housings	000 000 153.

This is a total loss in 220 days from July 1st to Feby 16 — of 672 minutes daily

or for whole Mill — 224 minutes daily

Chuder-grinders

			Mill Time total Loss mins daily
Coupling	11.4	1/3 is. 3.8	mins daily
Cables	26.6	8.8	"
Sheeves	7.7	2.5	"
Hopper	9.0	3.0	"
Plates	104.3	34.7	"
Belt.	7.6	7.6	" 5
Sheaves	29.2	9.7	" 1
Spacing Rolls	83.4	27.8	"
Bolts.	3.9	1.3	"
Loose plates	4.8	1.6	"
Thrust Collar.	17.3	5.7	"
Bearing -	28.0	9.3	"
Collars.	7.6	2.5	"
Bushings	159.0	53.0	"
Springs -	6.0	2.0	
Girders	59.8	19.9	"
Shafts	94.0	31.0	"
Hew Bolt Jack	6	2.0	"
Various -	7.6	2.5	
		223 6	
Add Coupling - uncoup -		7 6	
		231 - 2	

It is probable the loss of time of coupling & uncoupling should not be divided by 3 in the total.

There are probably other items that should be corrected same as coupling etc -

There was 343 items against the 3 Rolls - it probable that for each item the mill had to be shut down + started up - I allow 10 minutes for this which makes a total of 3430 minutes which in 220 days is 15 minutes, 1/3 of which is 5 minutes -

So that loss daily plant Rolls -

	131.2
	236.2
	367.4 minutes,

Or 6 hours + 7 minutes - out of both shifts,

Substitution of Spring Rolls - Saves,

Cable	8.8
Sheaves	9.7
Spacing Rolls -	27.8
Girder	19.8
Coupling + Chg -	5.3
	71.4 minutes,

Reducing loss to 296 minutes or 4 hours 56 minutes,

It is probable belt time must not be divided by 3 but the mill is shown the whole time for any Roll belt. this will increase daily loss from Roll drive belts to 7.61 – This adds 5 minutes

This makes Corrected Total of

Plant	131.2
Rolls	241.2
	372.4

6 Hours & 12 minutes.

Kilns - total loss. 1st figures Kiln 1 2nd Kill 2
+ so. on

Short Coal

6380
1548
12625
4930
25483

Nose Brick -

4535
3630
720
4885
13770

Coal Screw choked

60
00
00
00
60

Heating up

435
195
195
1300
2125

Chalk Screw-	2045-
	2005-
	125-
	190
	4365-
Bolts	190
	80
	35-
	195-
	500
Idler Shafts	1285-
	430
	660
	120
	2295-
Motor Traps	125-
	000
	140
	000
	265-

Patching

3120
1050
1345
4345
9860

Chalk Supply out of Cow

17520
25870
23452
24622
91464

Shell Cracked

14205
0000
0000
0000
14205

Stack

525
11145
590
2230
14490

Bad Clinker Con

260
2035
000
75
2370

Apron

2250
720
000
2995 x
5965

Motor

2880
165
000
155
3150

Relining

1440
2160
420
12435 S
16455

Armature of Cooler

620
000
000
000
620

Motor Chalk feed

40
00
00
00
40

Motor Coal feed

70
00
00
00
70

Tires-

0000
1440
0000
0000
1440

Lining Cooler

0000
3080
0000
0000
3080

Coal Ring

0000
3440
0000
0000
3440 -

Total loss 225412 minutes
in 225 days - or 1000 minutes
or 16 hours daily —
Dividing this in the 4 Kilns
gives average daily loss Each
Kiln of 4 hours —

The method of keeping the record is such that nothing can be got out of it — Hereafter Each Kiln must account for 24 hours every minute whether the running or not & the reason otherwise record is no good & useless —

Conv 137 -

Belt slipping -	12	items	358 min lost
Belt splice caught in S Dump	2	"	555 "
" pulled apart at splice	3	"	92 "
" Ripped	1	"	305 "
" Repairing	5	"	374
" Taking up	5	"	487
" Fuse blew most due to overloads	27	"	715
" Tracking belt	2	"	17
Hopper blocked	3	"	61
Ducts to B plugs	1		19
Overload dust stout	1		20
Put on Special Wtr	1		47
Changing Motor	2		1270
Chg flex shaft Drive	3		232
Shaft Bent " "	1		50
Broken teeth "	4		492
Repair flex drive	1		240
New gear & shaft drive	2		860
Shaft broken			1930
Putting Chain on	1		55
Fuse broke	1		123
Chute Choked	1		12

5261 minutes lost - Conveyor drives -

Strap Brake -	1	Item	56 - mins lost
Switch burned out	1	"	76 "
Patching Hopper	1	"	22 "

Total loss 8469 minutes.

Of this 5261 minutes was lost by the troubles in the Motor & driving mechanism,
While the belt troubles & other things like fuses blowing from overload Hoppers etc was 3208 minutes.

The bad show of this Conveyor was due mostly to a Rotten drive & I hope it is fixed but from last record I think it hasn't ? ? -
This drive has a horrible record,
Why do gear teeth break -

Conveyor Dept Costs, Material

210 days

Belting-Con	12601 84	
Miscellaneous	804. 60	
Leather belting	491 96.	Rotten
Angle rubber	255 . 61	
Rollers + bearings	652 86	
Brushes on Con	300 66	Rotten
Sprocket chain	22. 46	
Motor Straps	18 74	
12" Scraper	87. 49	
Bearings	29 . 87	
Gudgeons	18 . 20	
Bucket Con wheels	1 . 40	
Maple lagging	73 60	
Canvas	33 . 40	
Pinions	30 . 45	
Oil chain	1 . 83	
Pig Lead	2 12	
Labor Repairs	484 12	
	15911.21	

$75.76 daily

225 days

Loss Time in Pkg Plant July 1 to Feby 15-06

Waiting for Cars	3769	minutes
Cleaning up Spills	3975	"
Big Bin Choked	1260	
Making Slide in Stock Hse –	770	
Moving Cement in Pkg Hse	1090	
Cleaning up Overflow Bin	1565	
Big Drive Belt.	575	
Taking up Pkg Hse Belt.	120	
Belt Slipped	120	
Cleaning Spill Pkg Hse	475	
Cleaning Bags –	1020	
Lining Shovels Pkg Hse	70	
Belt off Pkg Mac	60	
Changing Belt on Heavies	60	
Filling on Belt & Repairing	105	
Belt off Screw Con	440	
Waiting for Loco –	400	
Cleaning up floor	90	
Fixing Screw in Pkg Hse	30	
Waiting Tests	140	
Cleaning Screw.	60	
Collar off Shaft.	30	
Oiling hot bearing Pkg Hse	30	
Repair belt Barrel Mac	65	
	15459	

Big Caesar.

Broken-Digging out	4090	minutes
Gudgeon troubles	1125	
Drive Chain "	980	
Broken Wheel-	660	
Conveyor out order	530	
Motor	550	
Trolleys	195	
Hangers broke	570	
Track "	590	
Off Track	505	
Bearing Tight Chain broke	165	
Variable Wheels burnt out	300	
Motor Wrap broke	40	
Repair bolts On 145	60	
Repair frame	90	
Pinion broke	140	
"	115	
Pinion out track-	60	
Fuse blew	30	
Sprocket shaft bent	70	
Shaft bent bearing broke	435	
Shifting Bearings	150	
Gears Broke	590	
Belts slipped in bearings	100	
Bearings broke next big sprocket	95	
	12685	min

3400

60.—

3 | 375
175
50

62.
35
3500

2170

217 — 27) 65500 (149
325
217
1080
9765
2173
795

210 Days —

146 Screw Conv alongside Cement Stockth.

Digging out Conveyor.	2260	min
Gudgeons -	1170	"
Broken Hanger -	360	"
Repairs - (waiting)	210	"
Connecting up	195	"
Motor Three fuses	210	
" Armature burned out.	135	
" Solder melted	160	
" Fuse blew	90	
Putting blank in	60	
Covering Conv	75	
	4915	

136 Days - Record stopped Nov 16

147 - Conveyor to Bagging House

Cleaning out Conveyor	770
" Tail pully	235
Hopper	280
Drive belt broke	195
Cleaning belt.	155
Drive shaft broke,	300
Bearing end pulled burnt out	120
Strap broke	30
Belt slipped	90
" Broke	120
" Ripped	25
" Cutting out piece,	105
Brushes on Conv	30
Moving split tail Pully	30
Tail end bearing hot,	30
	2510

Supplies for Kiln July 1st 210 days –

Radial brick –	603	38
Nose "	88	25
Asbestos	211	.65
Water gauge –	86	.48
Coal feed screw	37	.71
Motor armat	78	.34 – Return
10" Pipe bushing	45	35
Paint –	100	00
Miscellaneous –	5.14	68
Cooler friction wheel & shaft	52	28
Bucket & Chuckes C –	22	98
Apron	77	26
Wheels Bucket Con –	42	00
Cooler Bricks	235	00
Fire Bricks –	66	50
Bucket Conv Shaft	10	75
Buckets – 13"-6 –	30	.09
Friction clutch –	15	86
Castings –	220	91
Bearings –	47	30
Motor Pinion shaft –	24	15
Scales permen t	6	00
Brick Plates	10	20
Chilled Sprocket	81	98
Roll Plates	344	82
Spacing bushings	6	.35
Chuckes Grisher Pin in –	37	42
Cope Bd CC –	39	02
Shaft "	18	45
Bucket Bd CC	3	50
Scraper Con Blades	1	04
Scraper Chain	2	00
Sill and Idler pully	1	62
Brass Bearings	1	52
Grease Cups	6	15
Chuckes Cooler Chain	12	22
Storage bunk Coal feed	2	00
Bucket Conv Sh 45	2	00
Fuming Chuck 30 Ch	2	00

Rotary Con 126 – 557.00
Pinion friction Hammers 4.41
Lucker Chain – 1.75
404.83

13 –
15
17
17

$19.26 daily

Supplies power plant - June to Jany inc 240 days

Valves -	272.53	Will this run steady
A & Cocks.	5.26	
Diaphragms -	6.00	
Oil Cups glasses	3.71	
Fuses -	7.00	
Brass rods	6.78	
Gauge Stem	1.31	
Door Levers -	25.56	
Discs	9.24	
Front Head	2.50	
Studs	23.10	
Stores	2335.00	
Miscellaneous	2524.16	Big item what is it?
Grate Bars	435.00	
Castings —	89.14	
Valve Seats	8.92	
Cook Springs —	161.50	What this —
Spare Air Cock	5.26	
Brick	307.47	
" Nose -	20.32	
Furnace arches	194.50	
Fire Clay	31.50	
Boiler Tubes	305.50	
	4671.26	

	4671 26	
Pipe fittings & pipe	81 47	
16" Belt	110 57	What's This
Jute Rope	22 42	
Colistik	30 00	
Piston -	90 00	
Light fixs	17 24	
Gauges	13 60	
Felt Covering	35 29	
Piston Springs -	6 00	
Rings	41 34	
Repair Boiler	589 84	
Pump Valves	62 64	
Feed Pump	8 64	
Door handles	6 00	
Lubricator	1 50	
Valve Springs -	2 75	
Head Pin	24 71	
Couplings	9 00	
Tin	94 00	What for
Governor pts	4 25	
Collars	2 56	
Turpentine	7 50	
Reducing Valve	6 75	
Power Engine	60 60	
	6009 93	

	6009 93		
Gauge Cock	4.99		
Chain –	1.44		
Tube Expander	5.60		
Valve Springs –	3 93		
Floats	15.07		
Stems & Wheels	5.36		
Mitre Gear	280.30	9	Whats this –
Boiler Compound	360.33	9	Big –
Pencil Bar	3.66		
C I Baffles	15.94		
Screws	17.25		
Steam Hose	58.67		
Crank Pin Levers	52.00		
Water Pump	2.17	7	
Water Strap	0.95	9	
Flannel –	1.57	6	
	6832.14	3	

$28.46 daily

Electrical Supplies July 15 to July 1 inc
210 days —

Starting boxes	446.00	is this permanent item?
Carbon brushes	475.00	
Amperefuse plugs	10.09	
Lamp Proof-fuse wire		
Miscellaneous	1617.16	what is this
Arc Carbons	6.93	
Speed Regulators	326.00	is this a supply
H & P Motors —	50.00	
Armature Pump Hse	382.00	is this an Extra
" Coils —	10.56	
Bearings Motor.	23.38	
Grids	10.82	
Bearings —	15.00	
Motor Straps	7.66	
	3380.60	

$16.1 daily

30 cars 66 lbs day

2 to 1

6000 tons

3.

7000 sq
2,7000,000 sq

3) 10000 - day
3333 -

10 yrs

Operating Labor for Repairs 210 days.

Quarry	1032.01	$ 4.91	daily
Railroad	2167.02	10.30	"
Crusher	1637.39	7.79	"
Mixing	694.30	3.30	"
Chalk Plant	3038.14	14.45	"
Kiln	4139.96	19 70	"
Clinker Grinder	9587.58	45.50	" Loaded
Packing Shipping	7861.75	37.40	" Long
Coal Pulverers	2063 71	9 82	Long
Power Plant,	3148 24	15 00	
Oil System	796.08	3 80	
Conveyor Dept	484 12	2.25	
Electric "	3363 23	16.00.	hourly
	$ 40443 53	$ 192.00	daily

Coal, ~~Jany~~ May to Jany incl - 270 days

	Tons Soft	Tons Anthra Coal	Tons Briquet Coal	Tons Pea Coal	Total
Quarry	1321				1321
Railroad	981	60			1041
Crusher P	481	256	65	62	864
Mixing P	468	256	65	62	864
Machine S	394	188		2	584
Power Plant,	20268	858		4	21130.
Kilns	22790.				22790

		Tons
Quarry	234 Days —	5.64 daily
Railroad	"	4.45 "
Crusher	"	3.7 "
Mixer	"	3.7 "
Machineshop	270 Days.	2.16 "
Power Plant,		78.25 "
Kilns		84.50 "

100 HP boiler

Quarry	17.76
Railroad	14.01
Crusher	11.65 — 1.32 Cents Ton Day
Mixer	11.65
Machineshop -	6.80
Power Plant,	$257.00 Daily Cost
Kilns	266.17 "

Oil - 270 days

gals 81323. 301 gals daily -
Cost, $23.60 "

712 66lb daily this is Rotten

Dynamite.

Pounds. 234 days - 258 lbs Daily
Cost 296 Daily -

Output 234 days - 861 Tons daily - 3½ c Ton

Car hoist & Dump of skip – 196 Dump Crushes

Circuit on Car hoist broke	56
Resistance box burned out	15
Cable on skip weight broke –	104
Chaining large rock	327
Skip wouldn't clear –	21
Cable broke	87
Controller fingers burned out	20
Teeth on gear skip dump broke	472
Rock stuck in skip –	22
Power wire on skip car hoist broke	49
Motor	10
Pneumatic gear broke.	227
Lining bearing skip dump –	8
Circuit wire Car hoist levers broke	43
Cable pulled over drum –	24
" " from Drum –	10
" Dolly Car broke.	13
" hooking skip dump pulled off sheave	7
Teeth broke – gear skip dump hoist	215
Cable skip dump slipped –	6
	1736

818 minutes –

472
227
215
914

No 1 Dryer 196 days -

Screen choked	783	
Throwing water on shaker	13	
No power on exhaust fan	193	
Exhaust fan blades worn out	600	
Two cheese pins in shaker	69	
Clean on shaker	537	280 due to over drying
Motor drive exhaust fan broke	28	
Fire in motor blew	37	
Motor bearing broke	21	
Fan in baffles Dryer	206	
Distributor Choked	91	
	2578	

131 minutes daily

Emergency mail 102 = 196 Dump —

Screw on generator brake	90
Working on Engine	84
Generator – Belt slipped	103
" Belt run off	130
" Belt torn in two	353
" Repair	40
" New belt	105
500 V generator Repair belt	120
" Taking up belt	162
" Belt run off	169
" Belt broke	70
Bearing fine shaft worn, new one	460
Wire blew switchboard	236
Set brushes 500 V gen	10
Repair steam gauge	10
500 V Gen throw over switch	17
" " Cable burnt out	20
Bearing melted	111
Engine cylinder blown out	135
	2425

1213 minutes

109 Cow 196 days —

Force blow	620		
Taking Cupoff [illegible]	39		
Hot bearing (log drive)	9 31		
Changing Motor	17 35	Drive	5262 minutes
Operating Grinding out	12 25		
Repair Motor	12 50		
replacing broken head idler	75		
" " Idle.	25		
Hopper Clogged	108		
Belt taking up	223		
" Repair	10	all other troubles	135 ½ min
" Forming 2 by hoppers	139		
" Patching	31		
" New belt,	178		
Repair Gummy Chunks	20		
	6616		33.7 minutes

Car 110 — 196 Days —

Coupling chain broken	1.75
Motor Rev Coil burned	25
" New Switch holder	2.09
" Changing Armature	2.84
" Put brushes in	1.37
Bearing worn of Cap Drive	4.36
" Hub "	2.00
New bush fouling Coupling	1.80
Belt pulled off plant	1.75
"	68
Finde Rubber Tire	29
Hopper Chained	20
Repair Coupling	55
	19.26

9.8 minutes

Con 112 – 196 days –

Taking up + Repair belt. O	127	
Fuse blew –	381	
Repair Hopper	18	
Screw off Chain	102	
Broken transformer. Water	74	
Overflow Chute.	71	
Hopper Clogged	45	
Old belt from 111 put on O	119	
Water Connection	71	
Repair Grade Problem O	36	
Put on Jumpup –	5	
	1049	5.3

Con 113+114 –

Shovelling out screw	228	
Jumpup	690	
Repair Screw	215	
fuse blew –	29	
	1162	5.9

210 days

Con 126 —

Head pulley Drive –	6670
Motor strap brake	130 ✓
" Pulley brake-changing –	225
Replacing wheels etc	1863
Taking buckets out & putting in	2938
Bent shaft	85 ✓
Overload	15
Oiling Wheels	5 13
Put Coupling on flex shaft	50 ✓
Replacing broken bushings –	450
Tightening up Con	290
Thil pulley stuck	280
New Collars on Drive Gearing	70 ✓
Hat Gearing	70 ✓
Pinion loose on flex shaft	695 ✓
Tightening Collar flex S	190 ✓
Putting loose Collars on Con	530 ✓
New pinion Gearing ..	790 ✓
	15946

76 minutes daily

of the 76 min 32 min due to drive shaft trouble

Semper

~~Elevator Clinker~~ Crusher

Broken – repairing	710 V
Propeller broke	200 V
Motor Brushes burnt out	70 V
Tightening bearing scrapers	65
Straighten braces	55
Tighten bolts	2.80
Fuse blew	25 V
Field coils grounded	80
Tightening – taking out kinks –	140
Placing Chipping floor shaft	50
Chute Clinker	30
Car Caught in rail bad formation in	195
Straighten Scraper	70
	1973

9.3 minutes daily

Car 125

Bent shaft-brake wheel in	1165
Replacing wheels	3027
Wires grounded	100
Magnet burned out on tune to car	175
Fuse blew	30
Magnet grounded	30
Wires burned out	220
Oiling Car	647
Jumpers Track	355 V
Broken pinion on Drive	65
Chipping hook teeth sprocket	25
	5839

27.8 min day

Elevator Clinker Crusher

Fuse blew	75
Tighten bolts	85
Replace broken bucket	95
Tighten screw "	45
	300

1.4 minutes daily

Conv No 130 –

Lapper Belt.	2391 -
New Belt	347
Hopper Blocks	149
Taking up Belt	130
Cut on Velcro –	60
Pkg "	48
Blade Hoppers	15 –
Commencing Drive bearings	85 –
Belt Lapper	40
Taking off Belt	60
Motor Burnt Out	520
	3845

18.3 minutes.

Con 131

Taking up belt.	5 76
Belt pulley apart	56
" New	2.35
" Repair	2 19
Overhead	5
Drive Gearing hot.	25
" Changing bearing [illegible]	2.15
" New bedding flywheel shaft under	2.00
" Left " "	180
" Pot Collar on shaft	58
" New Chain right [illegible]	60
Brushholder of Motor Gearing	24
Repair Motor Cones	20
Motor Strap Broke	38
Repair Chute	10
Blocks under Trunnion [illegible]	15
Cleaning Coal Motor	30
Fuses blew.	54
Cooking Oiling, Spel Bar	30
Cutting on Pillow	25
Motor dust shed	14
Hopper blocked	35
	24 39

11.5 mm daily

Con 138 –

Hopper choked	45
Repair Chute	31
Overload	23
Putting on Running board	8
Pkg. Oiling, Changing bearings	160
Taking up belt,	297
Belt slipped	65
" New	53
" Repair	137
Putting on Jumping idler	75
Placing guide Rubber	12
Chain & Pitman shaft	137
Chute Choked	11
Fuse blew	102
Motor strap	73
	1273

5.8 minutes daily

139 & 140

Repair Gudgeon	795
Screw shaft & bolts –	335
" Choked	185
" Broke – new screw	265
" Cleaning out	52
fuse blew	80
New pkg. due to bearing	58
Pounds holes, Motor broke	16
	1786

4.5 minutes daily

Coal plant

Engine –

Brake down	60
Belt on Generator	20
Fixing "	1010
	1090

Con 99 – [illegible] Stopping –

Tube Mills –

Repair belt	270
Fixing belt,	80
New belt,	60
[illegible] belt broke.	95
Hanging feed bolts,	20
Belt broke.	60
[illegible] screw stuck.	315
Tube Mill plug & broke screw	255
[illegible] worked loose	70
Mill choked	30
Hanging feed	40
[illegible] bearing broken	20
Bolts [illegible]	50
[illegible] screens under Rolls	30
Repair bearing	30
Bolts sheared on screw	130
Putting in bolts	315
[illegible] brake –	30
[illegible] pulley screwed)	10
	1993

9.1 minutes daily

Coal Rolls — 210 days —

[illegible]	491
Shaft bent	430
Repair flywheel bending	300
Nice Crushing Shell & Hopper	525
Tightening Rolls	150
Hot bearing Rolls	35
Hopper Clogged	45
Rolls Checked	150
Repair Roll pulley	385
Tightening belts on pulley	20
" Elevator	60
Taking out & putting in screws	53
Putting on belt	120
Screw Wrapper under walk	45
" Babbitt "	60
Coupling Chain broken	40
	3011

1413 hours daily

Total losses all plants

Daily

		Operating Time m. s.	Can be reduced to
Quarry	475.0	1. 27	246.0
Crusher	244.5	6.14	157.3
Chalk	249.3	18.00	127.4
Kiln	240.0	20.00	156.0
Packing	159.0	7.21	90.0
Cement Grinding	362.0	16.00	120.0
RR	1.5	0 0	0.0
Clinker Crusher	183.0	21.0	53.0
	19150.		9497

31.9 Hours daily = 15.8 hours daily

				Can be reduced
Quarry loses % of Total possible Time per			80%	46%
Crusher,	"	10 Hours	44	24%
Chalk	"	22 "	22	12,
Clinker Crusher	"	24 "	14	2
Cement Grinding	"	22 "	28	19
Kiln	"	24 "	17	10
Packing	"	16 "	24	15

Remarks

Quarry — Enough Cars & skips must be provided so there is no waiting for Cars — We have 150 & it is possible that if we get a big Capacity on we cannot supply ore for an average of 5000 bbls daily & may need 50 more Cars

A larger Motor should be put on No 4 & less drop in line — Wheelmyers says there is being done —

Better CO ABBlers on Rolls in Crushing plant — bad delays here —

Don't send so many Extra large Chunks to Quarry — Mallory tells me of an air drill or something like a Rivter that is fine for 6 Pc & halving 12 minutes lost each Day on Plant Suggest to Drive Dynamite, that Blue Rock be thrown out nearly as big as Limestone —

Gears on Skip dump are not strong (not) wide Enough for the Sudden Extreme torques —

There is too much loss of time from want of power on Exhaust fans No 1 Dryer — Lump one When will be fixed when new power plant — is Of also lost time in fan blades Suggest an Extra fan wheel be made & stored in Dryer

The flexible shaft drive on large Conveyors is the principal Cause of delay & something must be decided about what changes shall be made here — also Heavy motors are necessary on account of Overloads & heavy starting Torque on the motor —

Suggest Shell & bushings in link 10 heads & bush & nuts on for 125 & 126.

Quicker more convenient means for changing plates on grinders —

Aprons fixed on Kilns

Too much lost time on Generator Coal plant

Suggest that to prevent Belt wear very fine stuff be put on belt & later coarse stuff is dumped on. This will make a great saving in wear

18.74
116.74
94
7.66
47.66
40.74
196) 19.164 (9.